

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently amended): A walking control method for a legged robot, wherein walking control is performed using a foot-sole coordinate system based on sole positions and having at least a first coordinate axis in a direction connecting soles of legs, ~~and~~ a second coordinate axis perpendicular to the first coordinate axis in a horizontal plane, and a coordinate axis extending in the vertical direction as a control coordinate system for the walking control.

Claim 2 (Original): The walking control method for the legged robot according to claim 1, wherein attitude control is performed with different control characteristics for the first and second coordinate axes of the foot-sole coordinate system in the horizontal plane.

Claim 3 (Original): The walking control method for the legged robot according to claim 2, wherein the control characteristics are changed depending on the state of ground-contacting legs detected by ground contact sensors or a motion generator provided in the legged robot.

Claim 4 (Original): A walking control apparatus for a legged robot having a main body and legs, the walking control apparatus comprising a control device using a foot-sole coordinate system based on sole positions and having a first coordinate axis in a direction connecting the soles of the legs, a second coordinate axis perpendicular to the first coordinate axis in a horizontal plane, and a coordinate axis extending in the vertical direction as a control coordinate system for the walking control.

Claim 5 (Original): The walking control apparatus for the legged robot according to claim 4, further comprising sole position sensors on the legs, the sole position sensors detecting the sole positions, wherein the control device controls leg actuators provided on the legs for walking on the basis of the sole positions detected by the sole position sensors.

Claim 6 (Original): The walking control apparatus for the legged robot according to claim 5, further comprising ground contact sensors on the legs, the ground contact sensors detecting the contact states of the legs, wherein the control device performs the walking control by performing a coordinate transformation to a coordinate system based on the direction connecting the soles of the legs in accordance with the sole positions detected by the sole position sensors and the contact states detected by the ground contact sensors.

Claim 7 (Original): The walking control apparatus for the legged robot according to claim 5, further comprising a motion generator for generating the state of ground-contacting legs, wherein the control device performs the walking control by performing a coordinate transformation to a coordinate system based on the direction connecting the soles of the legs in accordance with the sole positions detected by the sole position sensors and a motion state detected by the motion generator.

Claim 8 (Original): The walking control apparatus for the legged robot according to claim 5, wherein the control device inputs control parameters with a coordinate system based on the sole positions detected by the sole position sensors and sets control characteristics in accordance with the input control parameters.

Claim 9 (Previously Presented): The walking control apparatus for the legged robot

according to claim 6, wherein the control device changes the control characteristics depending on the state of the ground-contacting legs detected by the ground contact sensors or the motion generator.

Claim 10 (Previously Presented): The walking control apparatus for the legged robot according to claim 6, wherein the control device includes coordinate transforming means for transforming sensor information detected in a coordinate system included in the sensors into the foot-sole coordinate system based on the sole positions of the ground-contacting legs.

Claim 11 (Previously Presented): The walking control apparatus for the legged robot according to claim 6, wherein the control device includes coordinate transforming means for transforming motion pattern information described in a coordinate system based on the moving direction into the foot-sole coordinate system based on the direction connecting the soles of the legs.

Claim 12 (Previously Presented): The walking control apparatus for the legged robot according to claim 10, further comprising coordinate transforming means for transforming signals generated in the foot-sole coordinate system based on the direction connecting the soles of the legs into one of the sensor coordinate system included in the sensors, the moving-direction coordinate system based on the moving direction of the legged robot, and a body coordinate system based on the body of the legged robot.

Claim 13 (Previously Presented): The walking control apparatus for the legged robot according to claim 7, wherein the control device changes the control characteristics depending on the state of the ground-contacting legs detected by the ground contact sensors

or the motion generator.

Claim 14 (Previously Presented): The walking control apparatus for the legged robot according to claim 7, wherein the control device includes coordinate transforming means for transforming sensor information detected in a coordinate system included in the sensors into the foot-sole coordinate system based on the sole positions of the ground-contacting legs.

Claim 15 (Previously Presented): The walking control apparatus for the legged robot according to claim 7, wherein the control device includes coordinate transforming means for transforming motion pattern information described in a coordinate system based on the moving direction into the foot-sole coordinate system based on the direction connecting the soles of the legs.

Claim 16 (Previously Presented): The walking control apparatus for the legged robot according to claim 11, further comprising coordinate transforming means for transforming signals generated in the foot-sole coordinate system based on the direction connecting the soles of the legs into one of the sensor coordinate system included in the sensors, the moving-direction coordinate system based on the moving direction of the legged robot, and a body coordinate system based on the body of the legged robot.

Claim 17 (Previously Presented): The walking control apparatus for the legged robot according to claim 14, further comprising coordinate transforming means for transforming signals generated in the foot-sole coordinate system based on the direction connecting the soles of the legs into one of the sensor coordinate system included in the sensors, the moving-direction coordinate system based on the moving direction of the legged robot, and a body

coordinate system based on the body of the legged robot.

Claim 18 (Previously Presented): The walking control apparatus for the legged robot according to claim 15, further comprising coordinate transforming means for transforming signals generated in the foot-sole coordinate system based on the direction connecting the soles of the legs into one of the sensor coordinate system included in the sensors, the moving-direction coordinate system based on the moving direction of the legged robot, and a body coordinate system based on the body of the legged robot.